

Amendment
U.S. Patent Application No. 09/708,189

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A method of selecting operational parameters for transmitting a signal over a communication channel of a communication network, the method comprising the steps of:

(a) determining RF conditions on the communication channel from a received signal transmitted over the communication channel;

(b) selecting a preliminary set of parameter values for the operational parameters ~~an initial set of parameter values for transmitting a signal over the communication channel~~ based on the RF conditions determined from the received signal;

(c) using the preliminary ~~initial~~ set of parameter values to identify ~~other~~ candidate sets of parameter values as ~~other~~ potential candidates for transmitting the signal, an expected performance value being associated with each of the candidate sets of parameters, wherein determination of the expected performance value is independent of the RF conditions determined from the received signal ~~wherein parameter values in said other sets of parameter values differ from parameter values in the initial set of parameter values by less than a predetermined amount;~~

(d) ~~choosing~~ selecting from among the candidate sets of parameter values a selected set of parameter values having the expected performance value indicating a highest expected performance among the candidate sets of parameter values, such that selection of the selected set of parameter values from among the candidate sets of parameter values is independent of the RF conditions determined from the received signal; and

(e) transmitting the signal on the communication channel using the selected set of parameter values.

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2. (Currently Amended) The method of claim 1, further comprising the steps of:

(f) prior to step (d), using a previous set of parameter values with which the received signal was transmitted to identify additional candidate sets of parameter values for transmitting the signal if the previous set of parameter values differs from the ~~initial~~ preliminary set of parameter values by more than a predetermined amount, ~~wherein parameter values in said additional candidate sets of parameter values differ from parameter values in the previous set of parameter values by less than a predetermined amount; and~~

wherein the candidate sets of parameters in step (d) include the additional candidate sets of parameter values.

3. (Currently Amended) The method of claim 1, wherein step (b) includes forming a system state vector from the ~~initial~~ preliminary set of parameter values, and steps (c) and (d) carry out a system state transformation on said system state vector.

4. (Currently Amended) The method of claim 1, wherein the ~~performance of each candidate set of parameter values is represented by a~~ expected performance values are pre-computed weights stored in a table, ~~and wherein step (d) includes selecting the candidate set of parameter values having a weight corresponding to a highest performance.~~

5. (Currently Amended) The method of claim 1, wherein the ~~initial~~ preliminary set of parameters includes at least one of: data rate, packet length, signal bandwidth, frequency channel, code channel, transmit power, multipath profile and forward error correction scheme.

6. (Original) The method of claim 1, wherein the determined RF conditions include at least one of: received signal power, multipath characteristics and interference characteristics.

7. (Original) The method of claim 1, wherein the signal being transmitted contains at least one of control, audio, video and data information.

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8. (Currently Amended) A communication node for communicating with other nodes in a network over communication channels, comprising:

a receiver configured to process a received signal transmitted over a communication channel to determine RF conditions on the communication channel;

a processor configured to select a preliminary set of parameter values for the operational parameters responsive to based on the RF conditions determined from the received signal ~~for selecting an initial set of parameter values for transmitting a signal over the communication channel~~, and using the ~~initial~~ preliminary set of parameter values to identify ~~other~~ candidate sets of parameter values as ~~other~~ potential candidates for transmitting the signal, an expected performance value being associated with each of the candidate sets of parameters, wherein determination of the expected performance value is independent of the RF conditions determined from the received signal wherein parameter values in said other sets of parameter values differ from parameter values in the initial set of parameter values by less than a predetermined amount, said processor ~~choosing~~ selecting from among the candidate sets of parameter values a selected set of parameter values having the expected performance value indicating a highest expected performance among the candidate sets of parameter values, such that selection of the selected set of parameter values from among the candidate sets of parameter values is independent of the RF conditions determined from the received signal; and

a transmitter configured to transmit the signal on the communication channel using the selected set of parameter values.

9. (Original) The communication node of claim 8, wherein said communication node is a mobile communication device.

10. (Original) The communication node of claim 8, wherein said communication node communicates with other nodes on a peer-to-peer basis.

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11. (Original) The communication node of claim 8, wherein said communication node is a multimedia communication device capable of transmitting and receiving audio, video and data messages.

12. (Currently Amended) The communication node of claim 8, wherein said processor uses a previous set of parameter values with which the received signal was transmitted to identify additional candidate sets of parameter values for transmitting the signal if the previous set of parameter values differs from the ~~initial~~ preliminary set of parameter values by more than a predetermined amount, ~~wherein parameter values in said additional candidate sets of parameter values differ from parameter values in the previous set of parameter values by less than a predetermined amount;~~ and

wherein the additional candidate sets of parameter values are among the candidate sets of parameter values from which the selected set of parameter values is chosen.

13. (Currently Amended) The communication node of claim 8, wherein said processor forms a system state vector from the ~~initial~~ preliminary set of parameter values, and carries out a system state transformation on said system state vector to choose the selected set of parameter values.

14. (Currently Amended) The communication node of claim 8, wherein the expected performance values are pre-computed weights, the node further comprising a memory for storing the pre-computed weights in a table representing the performance of each candidate set of parameter values, wherein the selected set of parameter values has a pre-computed weight corresponding to a highest performance among the candidate sets of parameter values.

15. (Currently Amended) The communication node of claim 8, wherein the ~~initial~~ preliminary set of parameters includes at least one of: data rate, packet length, signal bandwidth,

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frequency channel, code channel, transmit power, multipath profile and forward error correction scheme.

16. (Original) The communication node of claim 8, wherein the determined RF conditions include at least one of: received signal power, multipath characteristics and interference characteristics.

17. (Original) The communication node of claim 8, wherein said communication node communicates on the communication channel using carrier sense multiple access with collision avoidance.

18. (Original) The communication node of claim 8, wherein said communication node defines the communication channel using code division multiple access and frequency division multiple access.

19. (Original) The communication node of claim 8, wherein said communication node transmits a direct sequence spread spectrum signal.

20. (Original) The communication node of claim 8, wherein said communication node selects a set of parameter values for each message transmitted by said communication node.

21. (Currently Amended) A communication system, comprising:
a plurality of nodes communicating over communication channels, each of said nodes including: a receiver configured to process a received signal transmitted over a communication channel to determine RF conditions on the communication channel; a processor configured to select a preliminary set of parameter values for the operational parameters responsive to based on the RF conditions determined from the received signal ~~for selecting an initial set of parameter values for transmitting a signal over the communication channel~~, and using the initial

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preliminary set of parameter values to identify other candidate sets of parameter values as other potential candidates for transmitting the signal, an expected performance value being associated with each of the candidate sets of parameters, wherein determination of the expected performance value is independent of the RF conditions determined from the received signal wherein parameter values in said other sets of parameter values differ from parameter values in the initial set of parameter values by less than a predetermined amount, said processor choosing selecting from among the candidate sets of parameter values a selected set of parameter values having the expected performance value indicating a highest expected performance among the candidate sets of parameter values, such that selection of the selected set of parameter values from among the candidate sets of parameter values is independent of the RF conditions determined from the received signal; and a transmitter configured to transmit the signal on the communication channel using the selected set of parameter values.

22. (Original) The communication system of claim 21, wherein each node is a mobile communication device.

23. (Original) The communication system of claim 21, wherein nodes in said communication system communicate with each other on a peer-to-peer basis.

24. (Original) The communication system of claim 21, wherein each node is a multimedia communication device capable of transmitting and receiving audio, video and data messages.

25. (Currently Amended) The communication system of claim 21, wherein said processor uses a previous set of parameter values with which the received signal was transmitted to identify additional candidate sets of parameter values for transmitting the signal if the previous set of parameter values differs from the initial preliminary set of parameter values by more than a predetermined amount, ~~wherein parameter values in said additional candidate sets of parameter~~

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~~values differ from parameter values in the previous set of parameter values by less than a predetermined amount; and~~

wherein the additional candidate sets of parameter values are among the candidate sets of parameter values from which the selected set of parameter values is chosen.

26. (Currently Amended) The communication system of claim 21, wherein said processor forms a system state vector from the ~~initial~~ preliminary set of parameter values, and carries out a system state transformation on said system state vector to choose the selected set of parameter values.

27. (Currently Amended) The communication system of claim 21, wherein the expected performance values are pre-computed weights and each node further comprises a memory for storing the pre-computed weights in a table ~~representing the performance of each candidate set of parameter values~~, wherein the selected set of parameter values has a pre-computed weight corresponding to a highest performance among the candidate sets of parameter values.

28. (Currently Amended) The communication system of claim 21, wherein the ~~initial~~ preliminary set of parameters includes at least one of: data rate, packet length, signal bandwidth, frequency channel, code channel, transmit power, multipath profile and forward error correction scheme.

29. (Original) The communication system of claim 21, wherein the determined RF conditions include at least one of: received signal power, multipath characteristics and interference characteristics.

30. (Original) The communication system of claim 21, wherein said communication system employs carrier sense multiple access with collision avoidance.

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31. (Original) The communication system of claim 21, wherein said communication system employs code division multiple access and frequency division multiple access to define communication channels.

32. (Original) The communication node of claim 21, wherein said node transmit direct sequence spread spectrum signals.

33. (Original) The communication node of claim 21, wherein each node selects a set of parameter values for each message transmitted.

34. (New) The method of claim 1, wherein the candidate sets of parameter values are selected from among possible sets of parameter values based on the preliminary set of parameter values.

35. (New) The method of claim 1, wherein the RF conditions are determined at a same node that transmits the signal with the selected set of parameter values, such that the received signal is received by, not transmitted from, said same node.

36. (New) The method of claim 2, wherein the previous set of parameter values used to transmit the received signal is indicated in the received signal.

37. (New) The method of claim 4, wherein the preliminary set of parameter values is used to index the table of pre-computed weights, such that the candidate sets of parameter values are those within a predetermined number of indices of the preliminary set of parameter values.

38. (New) The node of claim 8, wherein the processor selects the candidate sets of parameter values from among possible sets of parameter values based on the preliminary set of parameter values.

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39. (New) The node of claim 12, wherein the previous set of parameter values used to transmit the received signal is indicated in the received signal.

40. (New) The node of claim 14, wherein the processor uses the preliminary set of parameter values to index the table of pre-computed weights, such that the candidate sets of parameter values are those within a predetermined number of indices of the preliminary set of parameter values.

41. (New) The system of claim 21, wherein the processor selects the candidate sets of parameter values from among possible sets of parameter values based on the preliminary set of parameter values.

42. (New) The system of claim 21, wherein the RF conditions are determined at a same node that transmits the signal with the selected set of parameter values, such that the received signal is received by, not transmitted from, said same node.

43. (New) The system of claim 25, wherein the previous set of parameter values used to transmit the received signal is indicated in the received signal.

44. (New) The system of claim 27, wherein the processor uses the preliminary set of parameter values to index the table of pre-computed weights, such that the candidate sets of parameter values are those within a predetermined number of indices of the preliminary set of parameter values.